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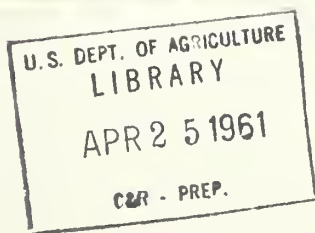
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International Cotton Calibration Standards Program



Agricultural Marketing Service • Cotton Division

SPONSORING ORGANIZATIONS:

American Cotton Manufacturers' Institute
American Cotton Shippers' Association
International Federation of Cotton and Allied
Textile Industries
National Cotton Council of America
United States Department of Agriculture

INTERNATIONAL COTTON CALIBRATION STANDARDS COMMITTEE:

Mr. John Wigington, American Cotton Manufacturers' Institute,
Clemson, South Carolina (ACMI)
Mr. E. W. S. Calkins, U. S. Rubber Co., Winnsboro, S. C. (ACMI)
Dr. Earl E. Berkley, Anderson, Clayton & Co., Houston, Texas (ACSA)
Mr. John M. Cook, McFadden Cotton Co., Memphis, Tenn. (ACSA)
Mr. Edmund Lord, Shirley Institute, Didsbury, Manchester,
England (IFCATI)
Mr. Fritz Hadwich, Bremen Cotton Exchange, Bremen, Germany (IFCATI)
Dr. Burt Johnson, National Cotton Council, Memphis, Tenn. (NCC)
Mr. Robert V. Miraldi, National Cotton Council, Washington, D. C.
(NCC)
Mr. E. J. Overby, Cotton Division, AMS, Washington, D. C. (USDA)
Mr. W. H. Fortenberry, Cotton Division, AMS, Washington, D. C. (USDA)

OFFICERS OF COMMITTEE:

Dr. Burt Johnson, Chairman
Mr. William H. Fortenberry, Secretary

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I PREAMBLE

The purpose, scope and operating details of the International Cotton Calibration Standards Program were originally approved by representatives of the sponsoring organizations in October and November, 1956. Distribution of cotton calibration and check test samples to laboratories began in February, 1957. During the subsequent three years, laboratories in various countries have made increasing use of these materials to calibrate their cotton testing instruments and standardize their test results. This present document is essentially a revision of the original Program; the amendments which have been made arise either from experience gained during operating the initial phase of the program or from minor organizational changes.

II PURPOSE, SCOPE AND ORGANIZATION

1. Purpose

The objective of this Program is to provide a mechanism by means of which any cotton fiber testing laboratory can obtain accurately reproducible test results for various fiber characteristics. The adoption of suitable standardization procedures will facilitate a more precise evaluation of the quality of raw cotton, and thereby be advantageous in both international trade and in the manufacturing industries of various countries.

2. Scope

The principal function of the International Cotton Calibration Standards Program is to make available calibration cottons for which standard test values have been established for various fiber properties as herein provided. By use of these cottons a fiber testing laboratory can obtain reproducible results by:

- (a) Direct calibration or mechanical adjustment of its instruments and ancillary equipment; or
- (b) Bringing its level of testing to a standard level either by controlling the performance of operators or by applying adjustment factors to test values on the basis of control tests carried out simultaneously on the calibration cottons.

The initial phase of this program shall include furnishing calibration cottons for which standard test values have been established for (a) fineness as measured by the Micronaire, and (b) fiber tensile strength as measured by the Pressley tester at a nominally zero gauge or test length on flat bundles of fibers.

Cottons for the calibration of instruments measuring fiber properties other than those now measured, or for measuring those properties now in the program but by instruments other than the Pressley (O gauge) and Micronaire, shall be adopted and included in the program only when (a) the sponsors of the program request that additional fiber properties be tested, and (b) the proposed method of test has been fully investigated and the results found to be reproducible.

The secondary function of the International Cotton Calibration Standards Program is to provide purchasers of the calibration cottons periodically with unknown check samples of cotton for testing. These "check test samples" are to be tested and the results reported to the USDA. The purpose of the check test program is to provide a means of evaluating the effectiveness of the Calibration Program in establishing a uniform level of testing and to provide basic data for establishing practical tolerances for routine and commercial test results.

3. Organization

(a) Sponsors

The International Cotton Calibration Standards Program is sponsored by the following organizations:

American Cotton Manufacturers' Institute (ACMI)
American Cotton Shippers' Association (ACSA)
International Federation of Cotton and Allied
Textile Industries (IFCATTI)
National Cotton Council of America (NCC)
United States Department of Agriculture (USDA)

(b) International Cotton Calibration Standards Committee

- (1) The Committee shall be composed of two representatives of each of the sponsoring organizations. Such representatives shall be designated in writing by the heads of the respective organizations.
- (2) The Committee shall elect a Chairman and Secretary, and other officers if required.
- (3) Each sponsoring organization shall have two votes which may be cast by (a) its appointed members to the Committee, (b) by proxy of its appointed members, or (c) by deputy delegates designated by the sponsoring organizations.

(c) Responsibilities and Operating Procedures of Committee

- (1) The Committee shall be responsible for establishing the operational framework within which the cotton calibration program will be operated by USDA and for maintaining the program in accordance with the general policy outlined in this document.
- (2) Actions relating to major matters of purpose and scope shall be based on the unanimous vote of all representatives of the sponsoring organizations, but decision on minor matters of procedural detail may be taken on a majority vote. If there is any doubt whether an action under consideration is a major matter requiring a unanimous vote of all representatives of the sponsoring organizations or a minor matter requiring only a majority vote, the question shall be decided by the Chairman of the Committee.
- (3) The Chairman shall call a meeting of the Committee as often as deemed necessary.
- (4) Draft agendas for meeting will be furnished by the Chairman to committee members and heads of sponsoring organizations in ample time for them to prepare their comments and suggestions in advance of date of meeting.
- (5) A draft copy of minutes of meetings will be submitted to all committee members for approval as quickly as possible after each meeting.
- (6) Copies of the approved minutes of meetings will be furnished to committee members and heads of the sponsoring organizations for transmittal to such members of their respective organizations as they may desire.
- (7) The Secretary of the Committee shall prepare a short progress report on the operation of the program each year ending June 30. Copies of this report will be distributed to heads of sponsoring organizations, committee members and participating laboratories.
- (8) Material in the approved minutes of meetings, check test reports, progress reports, and other releases pertaining to this program may be released by any of the sponsoring organizations as they may desire.
- (9) Copies of all news releases made by any of the sponsoring organizations shall be forwarded to the heads of the other organizations and the Secretary of the Committee.
- (10) Other responsibilities will be assumed by the Committee as the program is expanded.

III OPERATING PLANS

1. Execution of Program by U. S. Department of Agriculture

The Cotton Division, Agricultural Marketing Service, U. S. Department of Agriculture, will operate the program in accordance with policies outlined in this document or as modified by the International Cotton Calibration Standards Committee referred to in Section II - 3(b). USDA may use its discretion in conducting day-to-day operations in behalf of the Committee and the sponsoring organizations. Details of how the calibration cottons are prepared and made available by the USDA are given in Section IV. The operation of the check test program by the USDA is given in Section V.

2. Designation of Sponsors' Laboratories

Laboratories which are to determine standard test values for the calibration cottons referred to in Section II - 2, shall be designated in writing by the respective sponsoring organizations listed in Section II - 3(a). The ACMI, ASCA, NCC and USDA may each designate one laboratory for this purpose. The IFCATI may designate two such laboratories. If and when additional sponsors participate in this program they may also designate a laboratory. The laboratories designated by the current sponsoring organizations are as follows:

- (1) American Cotton Manufacturers' Institute, Clemson, South Carolina (ACMI)
- (2) U. S. Testing Company, Dallas, Texas (ACSA)
- (3) Shirley Institute, Manchester, England (IFCATI)
- (4) Bremen Cotton Exchange, Bremen, Germany (IFCATI)
- (5) U. S. Department of Agriculture, Washington, D. C. (USDA)

IV STANDARD CALIBRATION COTTONS

1. Range of Current Standard Calibration Cottons

The calibration standards to be made available under this program will eventually cover the entire scale of Micronaire values and an adequate range of values of fiber bundle tensile strength. Six calibration standards are now available under this program. The three American upland cottons were first issued in 1957 and represent high, medium and low test figures for both Micronaire value and fiber bundle tensile strength at zero gauge length; they are identified as calibration cottons A, B, and C. The Egyptian cotton is an extra-long staple type, issued as a calibration cotton in 1959 and identified as calibration cotton D.

Two additional calibration cottons were made available in 1960, one being an immature American-Egyptian type and the other a coarse Asiatic cotton and are identified as calibration cottons E and F, respectively.

Established test values for current calibration cottons are shown in the following table:

| Calibration standards | Description | Established test values | | | | |
|-----------------------|-------------------|-------------------------|-----------------------------------|---------------|-----------|--|
| | | Micronaire reading | Pressley fiber strength "O" gauge | | | |
| | | | Ratio | Grams per tex | 1,000 psi | |
| A | American upland | 5.50 | 6.72 | 36.0 | 72,500 | |
| B-2 | American upland | 4.63 | 7.50 | 40.2 | 81,000 | |
| C | American upland | 3.41 | 8.58 | 46.0 | 92,600 | |
| D | Egyptian | 3.74 | 9.11 | 48.8 | 98,400 | |
| E | American-Egyptian | 2.83 | 8.58 | 46.0 | 92,600 | |
| F | Asiatic | 7.08 | 7.00 | 37.5 | 75,600 | |

2. Preparation of Standard Calibration Cottons

The following procedures shall be followed by USDA in blending and processing into card web each bale selected for use as a calibration cotton unless modifications are required because of the physical characteristics of a new type cotton:

- (1) Remove bale bands and allow bale to expand.
- (2) Divide bale into 16 piles of equal quantities, with each layer removed making part of each of the 16 piles.
- (3) Open each pile by hand and allow to condition for one day.
- (4) Process each pile into a 12-ounce breaker lap.
- (5) Feed every 4th breaker lap to picker (4 doublings) and produce 16 - 11-ounce intermediate laps (second picking).
- (6) Feed every 4th intermediate lap to picker (4 doublings) and produce 16 - 11-ounce finisher laps (third picking).
- (7) Feed each finisher lap (3rd picking) to the card to produce a 40-grain card web at the following rates of carding:

- (a) 12-1/2 pounds per hour for cottons 15/16-inch and shorter in staple length.
 - (b) 9-1/2 pounds per hour for cottons 31/32-inch through 1-1/16 inches in staple length.
 - (c) 6-1/2 pounds per hour for cottons 1-3/32-inches through 1-1/4-inches in staple length.
 - (d) 4-1/2 pounds per hour for cottons 1-9/32-inches and longer in staple length.
- (8) Do not piece up web to card calender rolls.
 - (9) Allow card web to accumulate between doffer comb and calender rolls.
 - (10) Remove card web as it accumulates and place it in large, clean canvas bags.
 - (11) Ship bags of card web to the Washington office for packaging (by means of the equipment used for packaging staple standards) into 1/2-pound packages and labeling for distribution.

3. Selection of Test Samples for Establishing Standard Values

After the proposed bale of calibration cotton has been blended and processed into card web, 10 large samples shall be selected at random for testing by the designated laboratories for the purpose of establishing standard test values. Each of the 10 large samples selected to be tested for each proposed calibration standard shall be subdivided by USDA to provide test material for each of the designated laboratories.

4. Determination of Standard Test Values

Standard test values shown on each package of each of the standard calibration cottons shall be the averages of those determined by the laboratories designated for this purpose by the sponsoring organizations.

Samples of three suitable calibration cottons will be furnished by USDA along with the samples to be tested for any proposed calibration cotton. Ten individual test determinations shall be made by the designated laboratories in accordance with ASTM or ISO standard procedures, whichever is applicable, on each of the 10 different samples selected at random from each proposed calibration cotton after such cotton has been processed into card web.

An adequate number of tests shall be made by the designated laboratories on the three specified calibration cottons prior to or concurrent with the testing of a new cotton to determine

its suitability for calibration purposes. If the three calibration cottons are tested prior to testing the new material and the test results are on the correct level, the laboratory may proceed with the testing of the proposed calibration cotton. If the test results on the three specified calibration cottons are not on the proper level, further adjustment of instruments and technique should be made before tests are made on the proposed calibration cottons.

Laboratories preferring to test the calibration cottons concurrently with the proposed new calibration cotton should adjust the results obtained on the new material being tested according to the deviations of actual test results for the three specified calibration cottons from their recognized standard values.

For each proposed calibration cotton the arithmetic average of the test results obtained from the 10 samples tested shall be calculated for each of the designated laboratories. The standard test values for the calibration cottons shall be the arithmetic average of these latter average values obtained by the designated laboratories. In order for a proposed calibration cotton to be acceptable, the average values for each of the designated laboratories shall agree with the average value obtained by all five designated laboratories within a tolerance of $\pm .1$ Micronaire reading and $\pm .20$ strength-weight ratio.

The Cotton Division, USDA, will tabulate the results obtained by the designated laboratories on material being tested for possible use as a standard calibration cotton, and furnish copies of the tabulation showing the average results obtained and the range between laboratories to committee members for their approval before samples representing the new standard calibration cottons are released for distribution.

5. Identification of Standard Calibration Cottons

- (a) The calibration cottons shall be identified by letters in alphabetical order, the cottons currently available are identified as calibration cottons A, B-2, C, D, E, and F. As additional cottons are added to the program to cover wider ranges of a given property or to test additional fiber properties, they will be identified consecutively with the next letter in the alphabet. When the range of standards has been sufficiently extended, the Committee may agree to classify the calibration cottons into groups, possibly according to type, origin or measured characteristics, or adopt some other appropriate system of identification.

- (b) Each package of a standard calibration cotton shall be labeled as illustrated in Figure 1. All packages of each standard are numbered consecutively, starting with sample No. 1. The labeling of samples for replacement bales for previous comparable standard calibration cottons shall be as described in Section IV - 6.

6. Replacement of Standard Calibration Cottons

When the supply of any standard calibration cotton as described in (1) of the foregoing is depleted, the same procedure shall be followed in the selection, blending, and processing of a replacement cotton as is outlined in (2) of the foregoing. Insofar as is practicable, the replacement in each instance shall be similar in fiber characteristics to the cotton being replaced. The replacement, however, shall be so identified as to distinguish it from the cotton being replaced. The first replacement bale for each of the calibration cottons shall have the number 2 placed after the identification letter of the calibration cotton. For example, when cotton from the original bale of calibration cotton A is depleted, the cotton packaged from the replacement bale will be identified as Calibration Cotton A-2. The second replacement bale will be identified as Calibration Cotton A-3, with each replacement bale thereafter being assigned the next consecutive number. The samples packaged from the replacement bale shall be assigned consecutive numbers starting with sample No. 1. The selection of test samples for distribution to the designated laboratories for the purpose of establishing standard values shall be in accordance with Section IV - 3, and the determination of the standard values shall be carried out as described in Section IV - 4.

7. Addition of Other Types of Cotton to Program

Other types of cotton shall be included as standard calibration cottons if and when the sponsoring organizations determine they are needed in the program. The selection, blending, processing, packaging, labeling, determination of standard test values, distribution, and replacement of such additional types of cotton shall be performed in accordance with procedures as outlined in the foregoing.

8. Prices and Distribution of Standard Calibration Cottons

The USDA shall establish prices for standard calibration cottons which will, insofar as is practicable, cover costs of their procurement, processing, distribution and related services. Form CN-62 - Application for Ordering Calibration Cotton Standards - may be obtained from the Cotton Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.

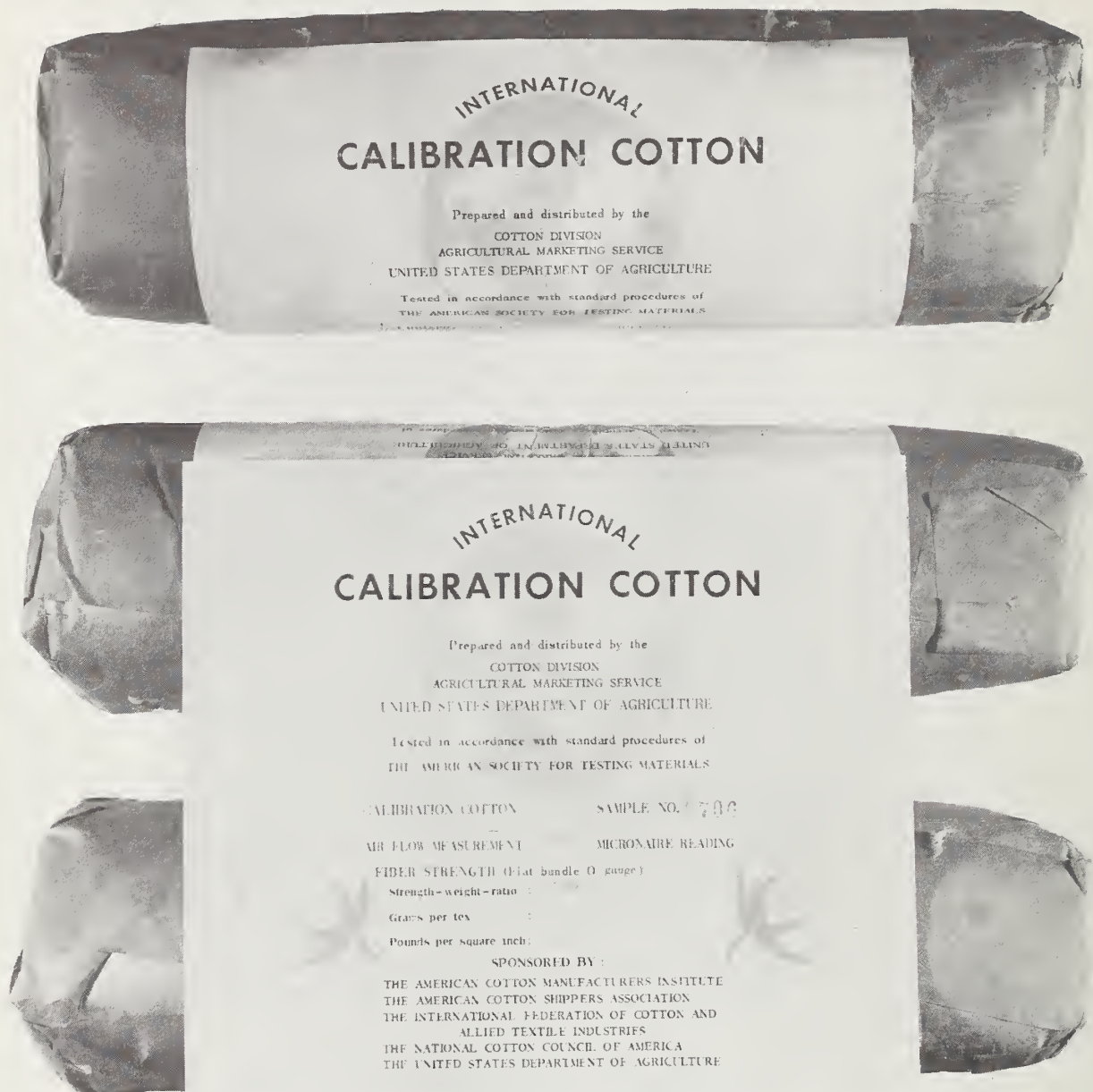


Figure 1

This form shows the standards available, established test values and prices including delivery. The current price per 1/2-pound package of any one of the standard calibration cottons is \$5.00. This price includes prepaid shipment by surface parcel post. For shipment by air parcel post the price per 1/2-pound package will be \$5.50 for destinations within the United States and \$6.00 for other destinations.

9. Instructions for Use of Standard Calibration Cottons

Detailed instructions with respect to the use of standard calibration cottons for calibrating Micronaire and Pressley instruments will be furnished by USDA with each new order filled.

V CALIBRATION CHECK TEST PROGRAM

A semi-annual check test program is conducted by USDA as part of the International Cotton Calibration Standards Program. The check test samples are available to any laboratory that purchases calibration cottons. When calibration cottons are purchased for the first time, the purchasing laboratory is requested to notify the Cotton Division, USDA, if it is interested in participating in the check test program. Those laboratories expressing a desire to participate are furnished free of any charge two unknown samples of blended cotton every six months for testing. The participating laboratory will test the two check test samples according to instructions furnished with the check test samples and forward the test results to USDA for analysis. The Cotton Division, USDA, will report the results of the semi-annual check test to participating laboratories. The report will be comprised of a tabulation showing the range of results, the average for the designated laboratories, the average of all laboratories, the range between the upper and lower tolerances, and the number and percentage of laboratories within tolerance. The standard deviation of results reported by the designated laboratories will also be included in the report. All laboratories reporting results within plus or minus 0.1 Micronaire reading and plus or minus .20 strength-weight-ratio (1.2 g/tex) for Pressley fiber strength of the average value established on each check test sample by the designated laboratories will be considered as being within acceptable limits when analyzing the check test results. At the discretion of USDA check test samples may be withheld from laboratories failing to return results for the two preceding semi-annual check tests distributed by the USDA.

VI TERMINATION

This program will continue in force under the mutual agreement of the sponsoring organizations. However, any sponsoring organization may withdraw from the program by giving written notice to the other organization 60 days in advance of and specifying the effective date of its withdrawal.

VII OTHER

The responsibilities assumed by the U. S. Department of Agriculture under this program are contingent upon funds being made available from which expenditures legally may be made.

APPROVED:

For the American Cotton Manufacturers' Institute:

Edward W.S. Calkins

Date Oct. 17, 1960

John T. Wipington

Oct 18, 1960

For the American Cotton Shippers' Association:

John M. Cook

Oct. 25, 1960

Karl E. Berkley

Nov. 3, 1960

For the International Federation of Cotton and Allied Textile Industries:

Mario Ludwig, Director

4th October 1960

H. S. Pearce Secretary General

4th October 1960

For the National Cotton Council of America:

Burt Johnson

Oct. 26, 1960

Garrett A. Buckner

Oct. 26, 1960

For the United States Department of Agriculture:

Edward J. Overly

Sept 12, 1960

William H. Fortenberry

Sept 12, 1960

